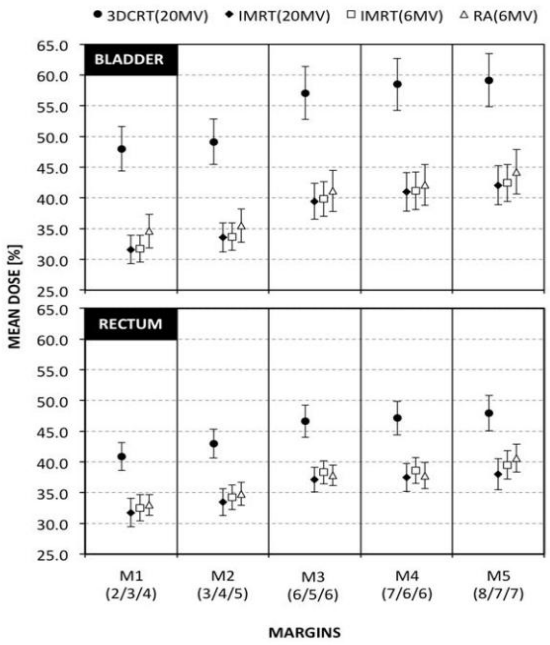

Conclusions: The choice of the appropriate method of irradiation (3DCRT vs dynamic techniques) and using the appropriate margin determining the image verification method (daily verification vs verification for the first fractions) significantly affects the average doses in the bladder and rectum.

PO-1102

Toxicity analysis in Helicoidal-IMRT (HT) treatment for head and neck tumors

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Purpose/Objective: Radiation-induced dysphagia is an undesirable toxicity in head and neck cancer (HNC) treatment. Radiotherapy (RT) delivered with HT might mitigate this toxicity. This is a retrospective review of HT treatment plans relating planning target volumes (PTVs) and organs-at-risk (OAR) dosimetry to severe toxicities.
Materials and Methods: Seventy two HNC patients treated with curative HT were included, 55% of whom had stage IV disease and 47% localised in the oral cavity and oropharynx. Dose for definitive RT was 70 Gy and for post-operative RT 60-66 Gy. 47% of patients received a simultaneously integrated boost. Severe G3-4 early and chronic toxicities (CTCAE version 3.0 and RTOG/EORTC scoring system) were scored and correlated with common risk factors. Dose distributions to PTVs and OARs were correlated to severe toxicities and treatment effectiveness, using COX regression and contingency analysis. Overall treatment time of radiation therapy (TTT) was reported, with 10 patients having been replanned during RT due to anatomical changes.
Results: Age resulted in more acute severe toxicity. Older patients (>64y) had more pain and xerostomia (p=<0.0001) and younger patients had more dysphagia and dermitis (p=<0.0001) in a multivariate analysis. Median pathologic PTV volume was 131 cc (109-153 cc) and elective PTV 345cc (288-402cc). We achieved excellent pathologic PTV coverage with the isodoses 95%, 98% and 2% covering 98%, 97% and 103% of volume, respectively. Isodoses 95%, 98% and 2% of elective PTV covered 100%, 98% and 127% of volume. Severe early toxicities were 31% mucositis, 11% pain, 7% xerostomia, 52% dysphagia and 45% dermitis; 21% of patients developed severe chronic dysphagia. Larger p. PTVs (>131 cc) resulted in significant higher early dysphagia rates (64.8% vs. 35.14% (p=0.02)) and late dysphagia rates (47.9% vs. 52% (p=0.059)). Wider PTVs showed a trend of correlation to decreased overall survival rates (OS at 3y, 36% vs.74% (p=0.23)). Concerning TTT, only 24% of patients had a standard treatment duration (<47 days), 40% had an intermediate TTT prolongation deviation (47 to 54 days) and 8% an important TTT prolongation (>54 days) in TTT, with 29% of patients start treatment on Thursday or Friday. TTT was not related with acute or late severe toxicities, neither with OS. Patients replanned during treatment (10 p) experienced more acute toxicity (pain and xerostomia p<0.01), but not an improved in locorregional control or OS. Replanning induced significant longer TTT (p=0.0001).
Conclusions: The use of HT improves the coverage of PTV volumes preserving salivary glands, even in great volumes. Higher doses to ipsilateral parotid (28Gy) and submaxilar gland (58Gy) seem to be related to severe toxicity. Replanification is related to more toxicity without improvement in disease control. Different toxicities by ages can be related with other factors like HPV presence (younger patients) and basal atrophic salivary glands (older patients).

PO-1103

Geometric and actual dose delivery accuracy in supine and prone position of breast tomotherapy

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Purpose/Objective: This study aims to evaluate the geometric and actual dose delivery accuracy in supine and prone positions of breast tomotherapy.
Materials and Methods: Forty early breast cancer patients were recruited for tomotherapy after breast conservation surgery. The breast cup size was ≥ C and TNM staging was T0-T3, N0-N1, M0. All patients received 25 fractions of treatment with 2 Gy/fr to total 50 Gy. Thirty were treated in supine position on customized vaclok during planning and treatment and ten were treated in prone position immobilized on prone breast board with customized vaclok. Daily MVCT was performed for treatment verification. For lateral, longitudinal and vertical dimensions, the offset distances in terms of mm before couch adjustment were recorded; while for the roll dimension, the degree of angle rotated were recorded. The difference in coordinates before and after matching in these four dimensional directions were recorded in each fraction for each patient. Systematic (SE) and random (RE) errors were calculated from the